WLM-1500/2500/3500

Wireless ADSL2+ Modem Router

User Manual

Version: 1.0

TABLE OF CONTENTS

Introduction

Congratulations on your purchase of the WLM-1500/2500/3500 Wireless ADSL2+ Modem. The WLM-1500 uses technology based on 802.11n, while the WLM-2500/3500 is fully compliant with 802.11n. These modems are also fully compliant with 802.11g & 802.11b. These modems provide the best performance when used in combination with 802.11n client adapters.

The WLM-1500/2500/3500 is not only a Modem or Wireless Access Point, but can also be used to connect wired Ethernet devices.

For data protection and privacy, the WLM-1500/2500/3500 can encode all wireless transmissions with WEP, WPA or WPA2 encryption. By default, the modem is secured with a WPA2 (AES) encryption key. (The WPA2-key is printed on the label underneath the modem.)

With a built-in DHCP Server & powerful SPI firewall the WLM-1500/2500/3500 protects your computers against intruders and known Internet attacks, and also provides safe VPN pass-through.

1 Key Features

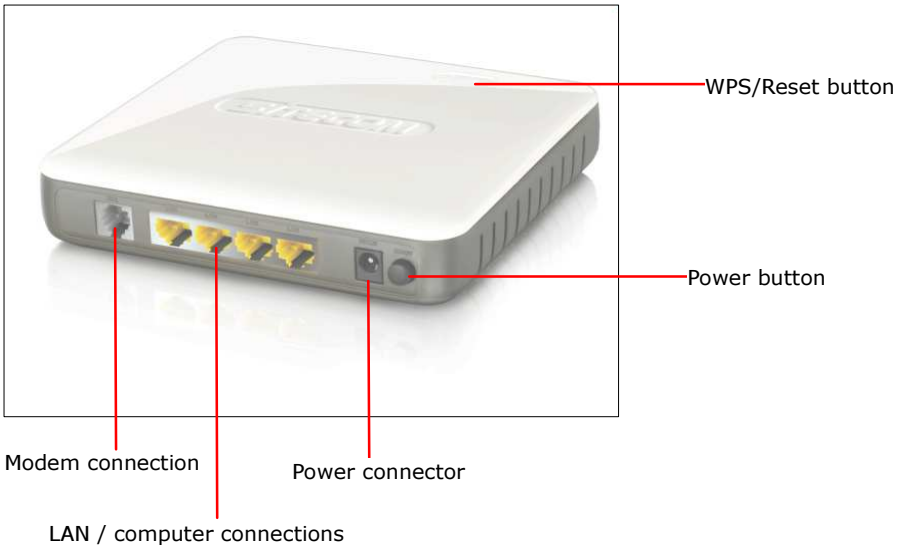
Features	Advantages
IEEE 802.11g compliant	Fully Interoperable with IEEE 802.11b / IEEE802.11g compliant devices
Based on 802.11n technology	WLM-1500: Up to 3 times faster than regular 802.11g. WLM-2500/3500: Up to 6 times faster than regular 802.11g (in combination with a 150n or 802.11n wireless adapter)
Four 10/100 Mbps Fast Ethernet Port (Auto-Crossover)	To connect four wired PC's as well.
Firewall supports Virtual Server Mapping, DMZ, IP Filter, ICMP Blocking, SPI	Avoids the attacks of Hackers or Viruses from Internet
Supports 802.11i (WPA/WPA2, AES), VPN pass-through	Provide mutual authentication (Client and dynamic encryption keys to enhance security)
Integrated modem (Annex A)	Fully compatible with the fastest ADSL2+ connections up-to-date.

2 Package Contents

Open the package carefully, and make sure that none of the items listed below are missing. Do not discard the packing materials, in case of return; the unit must be shipped back in its original package.

1. WLM-1500/2500/3500 modem/router
2. 220V ~ 240V Power Adapter
3. Quick Install Guide
4. CD (User's Manual)
5. Warranty card
6. UTP cable
7. RJ11 cable

3 Product Layout



Port	Description
ADSL	Connect your telephone/ADSL cable this port
LAN	Connect the cable from your PC or network device to this ports.
Power connector	Connect your power adapter to this port.
Power button	Turn the modem On or Off.

Back label

The back label describes the corresponding LED indications and port functionality.

LED	Description
Power	Lights up when powered ON. Blinks on TEST/RESET
ADSL	Lights up when an ADSL cable is connected.
Internet	Lights up when internet connection is UP.
WLAN	Lights up in Blue when WLAN is enabled. Blinks on traffic
OPS	Blinks when OPS mode is on
LAN1~4	When a LAN cable is connected the corresponding light lights up.

4 System Requirements

To begin using the WLM-1500/2500/3500, make sure you meet the following as minimum requirements:

- PC/Notebook.
- 1 Free Ethernet port.
- Wi-Fi card/USB dongle (802.11 b/g/n) – optional.
- Annex A, ADSL internet connection.
- PC with a Web-Browser (Internet Explorer, Safari, Firefox, Opera)
- Ethernet compatible CAT5 cables.

5 WLM-1500/2500/3500 Placement

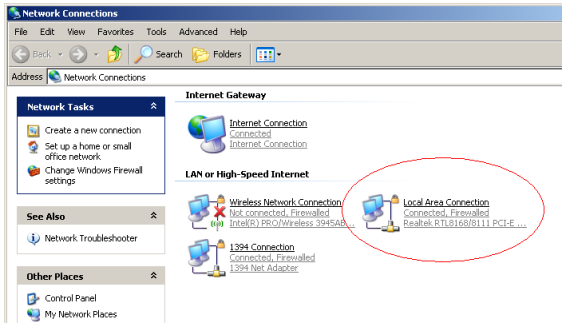
You can place the WLM-1500/2500/3500 on a desk or other flat surface, or you can mount it on a wall. For optimal performance, place your Wireless Broadband Modem/Router in the center of your office (or your home) in a location that is away from any potential source of interference, such as a metal wall or microwave oven. This location must be close to a power connection and the ADSL/phone line should not be over 2 meters long.

6 Setup LAN, WAN

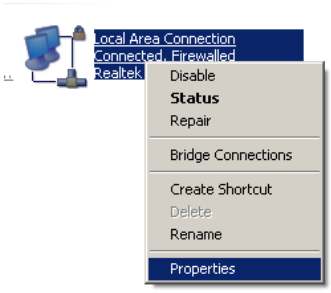
7 PC Network Adapter setup

Windows XP

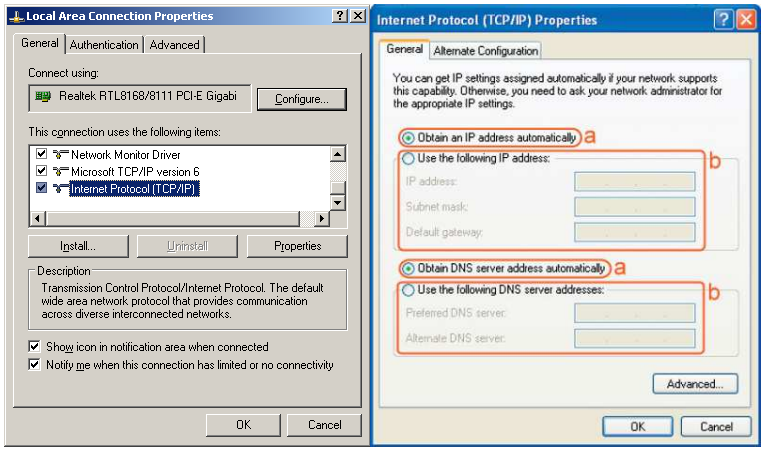
- Go to [*Start Menu*], → [*Control panel*], → [*Network Connections*].



- Right-mouse-click on the [*Local Area Connection]*) icon, and select [*properties*]



- Select [*Internet Protocol (TCP/IP)*] =>Click [*Properties*].

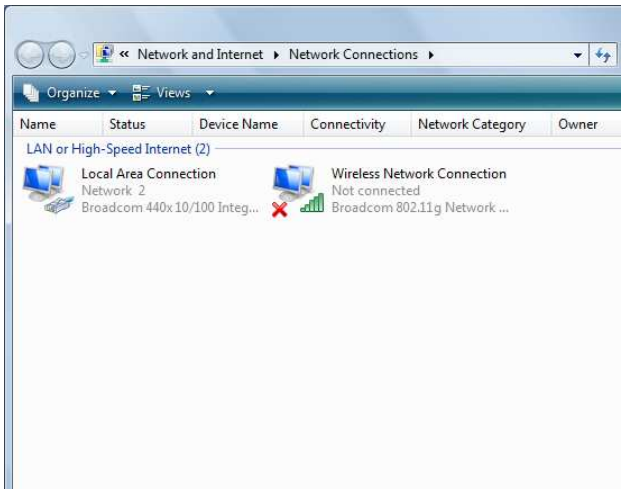


- Select the [*General*] tab.

  The WLM-1500/2500/3500 supports DHCP. Please select both [*Obtain an IP address automatically*] and [*Obtain DNS server address automatically*].

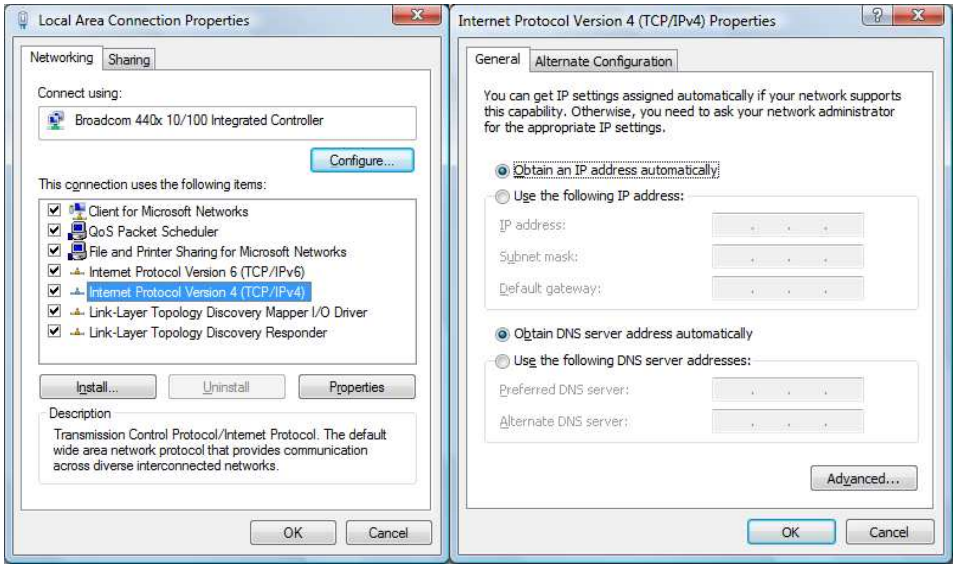
Windows Vista/Windows 7

- Go to [*Start Menu*], → [*Control panel*], → [*View network status and tasks*], -> [*Manage network connections*].



- Right-mouse-click on the [*Local Area Connection*]) icon, and select [*properties*]

- Select [*Internet Protocol Version 4 (TCP/IPv4)*], and Click [*Properties*].



- Open the [*General*] tab.

  The WLM-1500/2500/3500 supports DHCP. Please select both [*Obtain an IP address automatically*] and [*Obtain DNS server address automatically*].

8 Bring up the WLM-1500/2500/3500

Connect the supplied power-adapter to the power inlet port and connect it to a wall outlet. Press the Power-Button to turn the modem on.

The WLM-1500/2500/3500 automatically enters the self-test phase. During self-test phase, the Power LED will blink briefly, and then will be lit continuously to indicate that this product is in normal operation.

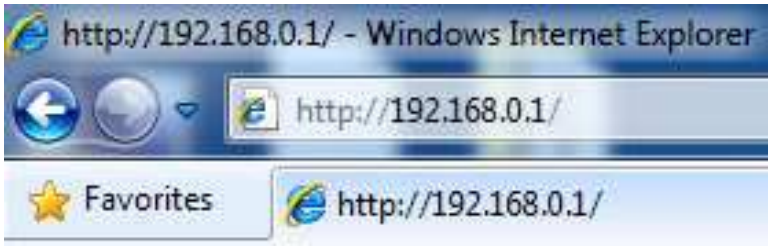
9 Initial Setup WLM-1500/2500/3500

LOGIN procedure

1. OPEN your browser (e.g. Internet Explorer).

2. Type http://192.168.0.1 in address bar and press [Enter]

   Type user name and password (The default username is "admin", the password can be found on the back label of the device).



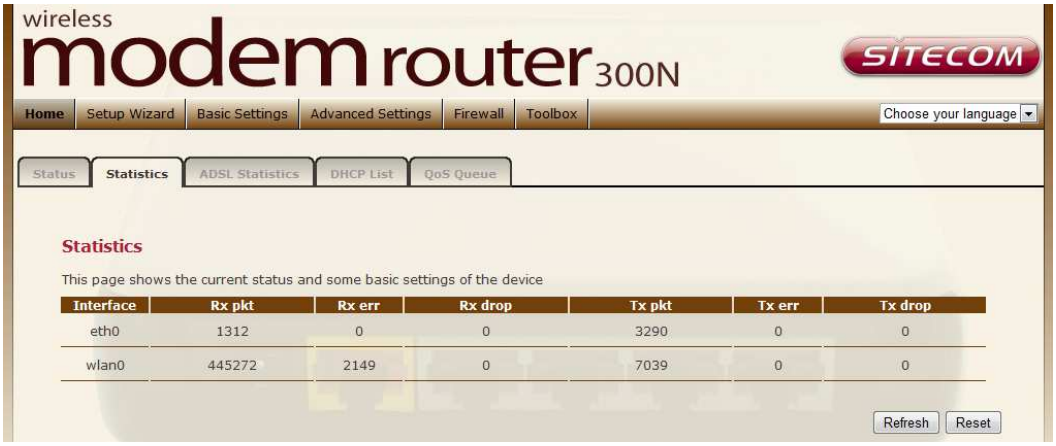
3. Click **OK**.
4. You will see the home page of the WLM-1500/2500/3500.

Status

The System status section allows you to monitor the current status of your router: the UP time, hardware information, serial number as well as firmware version information is displayed here.

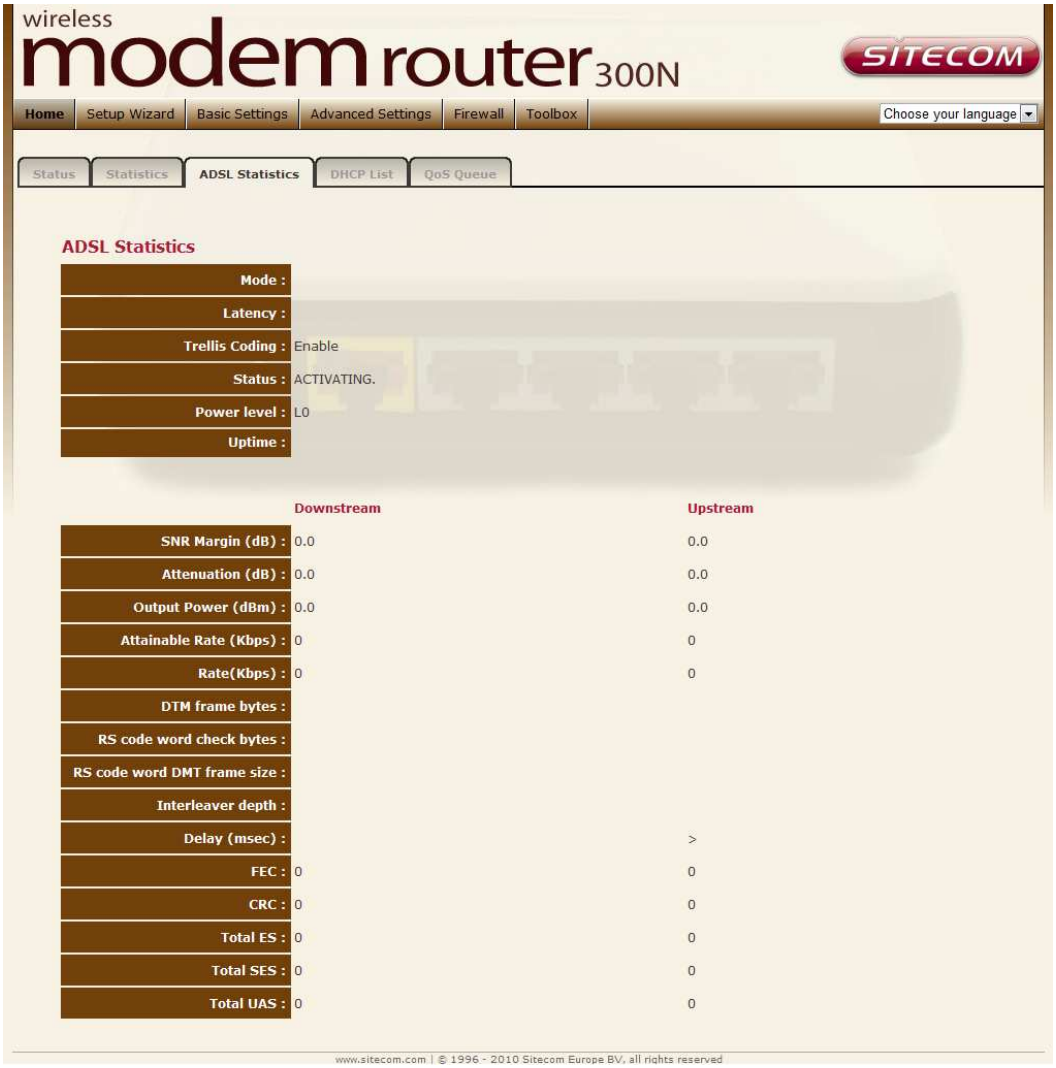
Statistics

You can view statistics on the processing of IP packets on the networking interfaces. You will not typically need to view this data, but you may find it helpful when working with your ISP to diagnose network and Internet data transmission problems. To display statistics for any new data, click "Refresh".



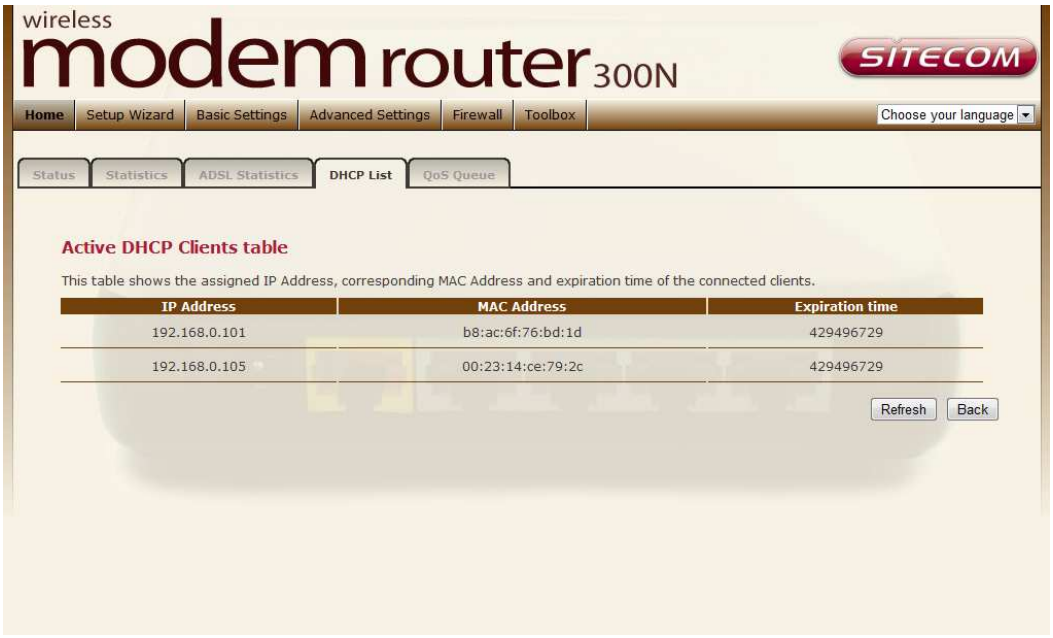
ADSL Statistics

This page shows the ADSL line statistic information.



DHCP List

This page shows all DHCP clients (LAN PCs) currently connected to your network. The table shows the assigned IP address, MAC address and expiration time for each DHCP leased client.



Use the **Refresh** button to update the available information.

QoS Queue

The screen allows you to configure a QoS queue and assign it to a specific network.

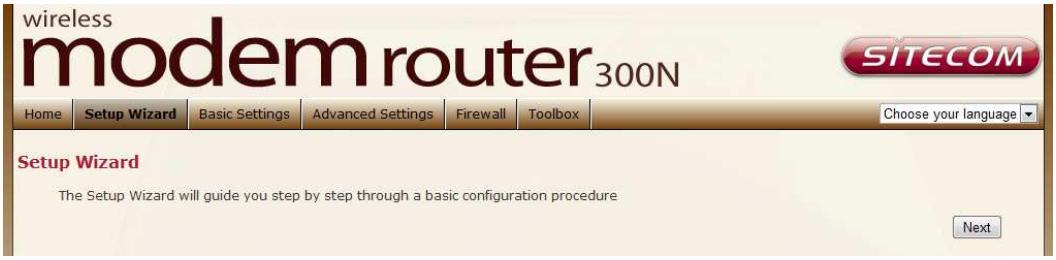
If the channel operation modes of your ADSL router are not configured and you enable the QoS function, you'll see the following message:

Please follow the Setup Wizard to finish WAN configuration before setting up QoS.

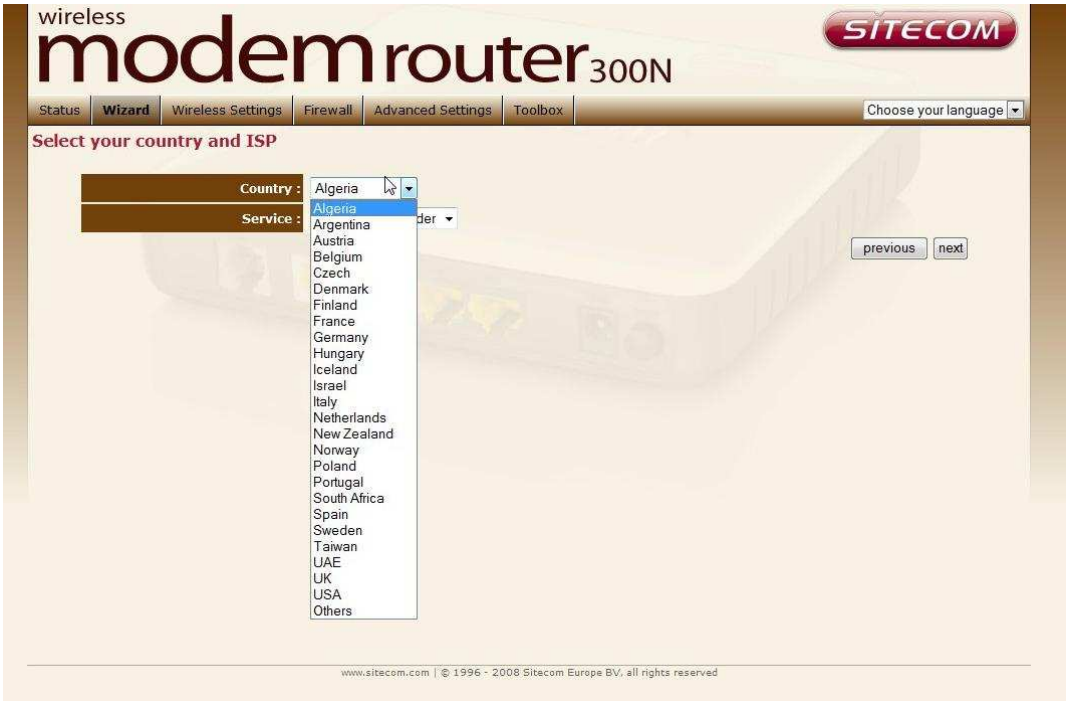
Parameter	Description
Queue Description	The description of the queue will appear automatically according to your selection.
Queue Status	The status of the queue is selected here.
Queue Interface	The WAN interface of the queue is selected here.
Queue Priority	The priority of the queue is selected here.

10 Configuration Wizard

Click **Wizard** to configure the modem. The Setup wizard will now be displayed; check that the adsl line is connected and click **Next.**



Select your country from the Country list. Select your internet provider. Click **Next.**



Depending on the chosen provider, you may need to enter your user name and password or hostname in the following window. After you have entered the correct information, click **Next**.

Click **Finish** to complete the configuration.

11 Basic Settings

LAN Settings

This page is used to configure the LAN interface of your ADSL Router. You can set IP address, subnet mask, and IGMP Snooping.

Parameter	Description
Interface Name	The interface name is "br0".
IP Address	Enter the IP Address of the ADSL router for the local user to access the router's web page. By default, the IP Address is **192.168.0.1**.
Subnet Mask	Enter the Subnet Mask of the ADSL router. By default, the Subnet Mask is **255.255.255.0**.
Secondary IP	Assign second IP address to LAN.
IGMP Snooping	Enable/disable the IGMP snooping function for the multiple bridged LAN ports. When "IGMP Snoop" (Internet Group Management Protocol Snoop) is enabled, the router can make intelligent multicast forwarding decisions by examining the contents of each frame's IP header. Without the function, the router will broadcast the multicast packets to each port and may create excessive traffic on the network and degrade the performance of the network.
Ethernet to Wireless Blocking	Enable/disable the 'Ethernet to Wireless Blocking', when this function is enabled, the traffic between Ethernet and wireless interfaces is not allowed.

DHCP Settings

You can configure your network and the router to use the Dynamic Host Configuration Protocol (DHCP). This page allows you to select the DHCP mode that this router will support.

There are two different DHCP Modes: DHCP Server and DHCP Relay. When the router is acting as DHCP server, please configure the router in the "DHCP Server" page; while acting as DHCP Relay, you can setup the relay in the "DHCP Relay" page.

DHCP Relay

Some ISPs perform the DHCP server function for their customers' home/small office network. In this case, you can configure this device to act as a DHCP relay agent. When a user's computer on your network requests Internet access, the router contacts your ISP to obtain the IP configuration, and then forward that information to the computer.

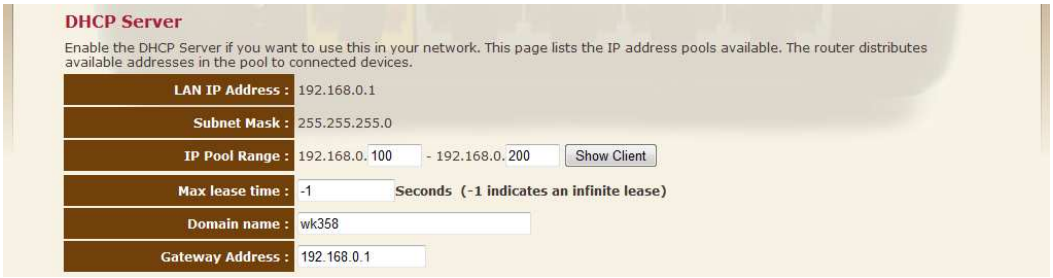
Parameter	Description
DHCP Server Address	Specify the IP address of your ISP's DHCP server. Requests for IP information from your LAN interface will be passed to the default gateway, which should route the request appropriately.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and go back to the web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

DHCP Server

When the DHCP server is enabled, the router will automatically give your LAN clients an IP address. If the DHCP is not enabled then you'll have to manually set your LAN client's IP addresses.



Parameter	Description
LAN IP Address	The current IP Address of the router.
Subnet Mask	The current Subnet Mask of the router.

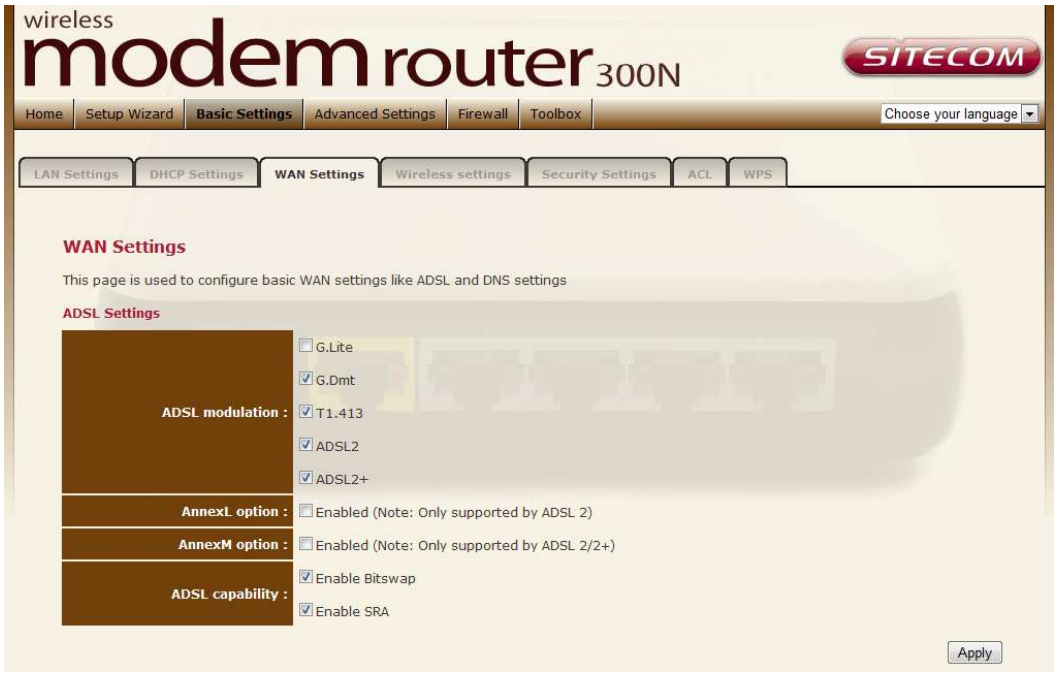
IP Pool Range	You can select a particular IP address range for your DHCP server to issue IP addresses to your LAN Clients. By default, the IP range is starting from IP 192.168.0.100 to 192.168.0.200.
Show Client	Click this button and a table is displayed. You can know the assigned IP address, MAC address and time expired for each DHCP leased client.
Max Lease Time	In the Lease Time setting you can specify the time period that the DHCP Server lends an IP address to your LAN clients. The DHCP will change your LAN client's IP address when this time threshold period is terminated.
Domain Name	A user-friendly name that refers to the group of hosts (subnet) that will be assigned addresses from this pool.
Gateway Address	The IP address of the ADSL router.
MAC Base Assignment	Click this button and you can assign a static IP Address to the computer with the designated MAC Address. The MAC Address is the 12-digit hexadecimal number, for example "00-d0-59-c6-12-43". The Assigned IP Address should be a unique IP Address.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

WAN Settings

The page allows you to select any combination of DSL modes.



Parameter	Description
ADSL modulation	Choose preferred ADSL standard protocols.
Annex L Option	Enable/Disable ADSL2/ADSL2+ Annex L capability.
Annex M Option	Enable/Disable ADSL2/ADSL2+ Annex M capability.
ADSL Capability	**Bitswap Enable** – Enable/Disable bitswap capability. **SRA Enable** – Enable/Disable SRA (seamless rate adaptation) capability.
ADSL Tone	Choose tones to be masked. The masked tones will not carry any data. Click "Tone Mask" to mask the tone number you have selected or all the tone numbers.

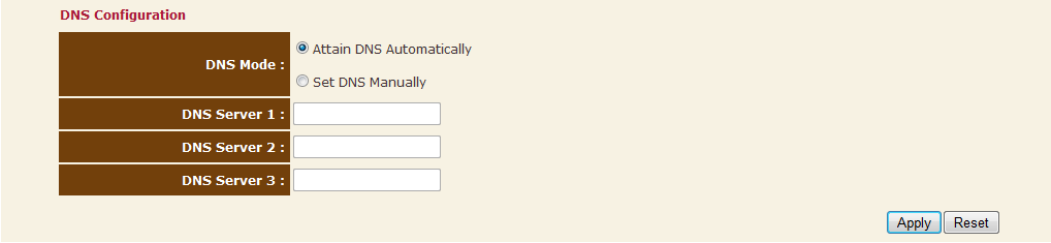
When you finish, click '**Apply**'. You'll see the following message displayed on the web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the

settings will take effect after it reboots.

DNS

A Domain Name System (DNS) server is like an index of IP addresses and Web addresses. If you type a Web address into your browser, such as "www.router.com", a DNS server will find that name in its index and the matching IP address. This page is used to select the way to obtain the IP addresses of the DNS servers.



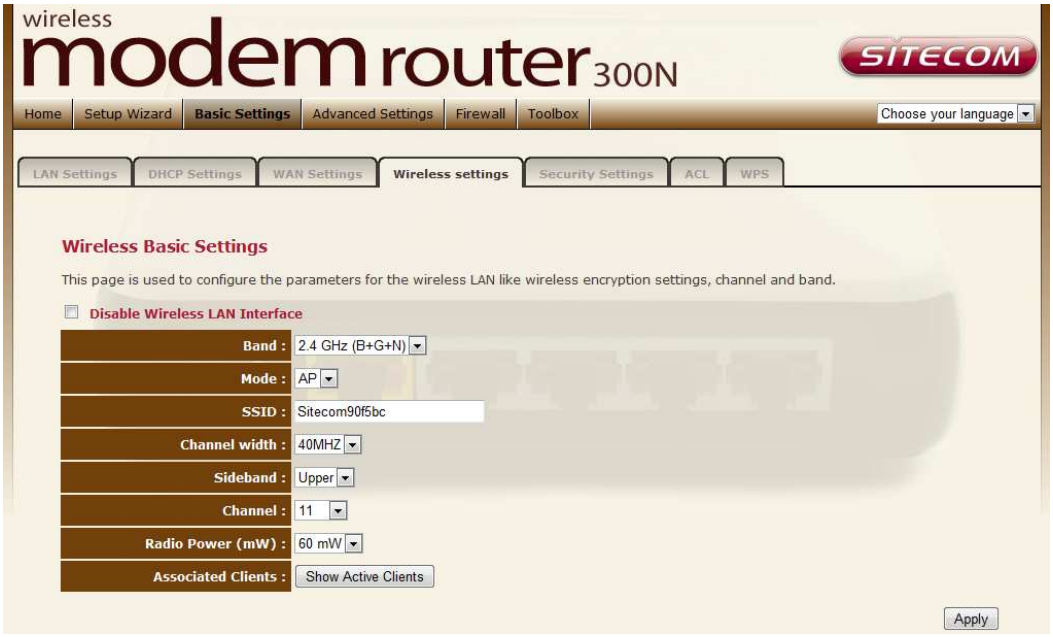
Parameter	Description
Attain DNS Automatically	Select this item if you want to use the DNS servers obtained from ISP.
Set DNS Manually	Select this item to specify up to three DNS IP addresses.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

Wireless Settings

This section provides the wireless network settings for your router. You can enable the wireless AP function here.



Parameter	Description
Band	Please select the radio band from one of the following options. 2.4GHz(B): 2.4GHz band, only allows 802.11b wireless network client to connect this router (maximum transfer rate 11Mbps). 2.4 GHz (G): 2.4GHz band, only allows 802.11g wireless network client to connect this router (maximum transfer rate 54Mbps). 2.4 GHz (B+G):2.4GHz band, only allows 802.11b and 802.11g wireless network client to connect this router (maximum transfer rate 11Mbps for 802.11b clients, and maximum 54Mbps for 802.11g clients). 2.4 GHz (N): 2.4GHz band, only allows 802.11n wireless network client to connect this router (maximum transfer rate 150Mbps). 2.4 GHz (G+N):2.4GHz band, only allows 802.11g and 802.11n wireless network client to connect this router (maximum transfer rate 54Mbps for 802.11g clients, and maximum 150Mbps for 802.11n clients). 2.4 GHz (B+G+N): 2.4GHz band, allows 802.11b,

	802.11g, and 802.11n wireless network client to connect this router (maximum transfer rate 11Mbps for 802.11b clients, maximum 54Mbps for 802.11g clients, and maximum 150Mbps for 802.11n clients).
Mode	It allows you to set the router to act in "AP", "Client" or "WDS" mode.
SSID	The SSID (up to 32 printable ASCII characters) is the unique name identified in a WLAN. The ID prevents the unintentional merging of two co-located WLANs. The default SSID of the router is "default".
Channel Width	Set channel width of wireless radio. Do not modify default value if you don't know what it is, default setting is 'Auto 20/40 MHz'.
Control Sideband	Select the upper band or lower band for your radio frequency. While upper band is selected, the channel number you can select is from channel 5 to channel 11. While lower band is selected, the channel number you can select is from channel 1 to channel 7.
Channel Number	It is the radio channel used by the wireless LAN. All devices in the same wireless LAN should use the same channel. Please select the country you are located and designate a channel that the router will use. If you want to let the router automatically to find an available channel with the highest signal strength, please select "Auto".
Radio Power (mW)	Set the maximum output power of the router. The higher output power, the wider coverage range.
Associated Clients	Click "Show Active Clients" button and you can see the wireless clients connected to the router.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

Security

This router provides complete wireless LAN security functions, include WEP, IEEE 802.1x, IEEE 802.1x with WEP, WPA with pre-shared key and WPA with RADIUS. With these security functions, you can prevent your wireless LAN from illegal access. Please make sure your wireless stations use the same security function.

Parameter	Description
Encryption	You can choose "None" to disable the encryption or select "WEP", "WPA(TKIP)", "WPA2(AES)" or "WPA2 Mixed" mode for security. When "WEP" is enabled, please click "Set WEP Key" button to choose the default key and set the four sets of WEP keys. **WEP** –WEP is less level of security than WPA. WEP supports 64-bit and 128-bit key lengths to encrypt the wireless data. **WPA(TKIP)** – WPA uses Temporal Key Integrity Protocol (TKIP) for data encryption. TKIP utilized a stronger encryption method and incorporates Message Integrity Code (MIC) to provide protection against hackers. **WPA2(AES)** – WPA2, also known as 802.11i, uses Advanced Encryption Standard (AES) for data encryption. AES utilized a symmetric 128-bit block data encryption. **WPA Mixed** – The router supports WPA (TKIP) and WPA2 (AES) for data encryption. The actual selection of the encryption methods will depend on the clients.
Use 802.1x Authentication	IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this wireless router before accessing the wireless LAN. The authentication is processed

	by a RADIUS server. Check this box to authenticates user by IEEE 802.1x.
WEP-64Bits	WEP is less level of security than WPA. WEP supports 64-bit and 128-bit key lengths to encrypt the wireless data. The longer key length will provide higher security. When "WEP-64Bits" is selected, you have to enter exactly 5 ASCII characters ("a-z" and "0-9") or 10 hexadecimal digits ("0-9", "a-f") for each Key (1-4).
WEP-128Bits	When "WEP-128Bits" is selected, you have to enter exactly 13 ASCII characters ("a-z" and "0-9") or 26 hexadecimal digits ("0-9", "a-f") for each Key (1-4).
WPA Authentication Mode	There are two types of authentication mode for WPA. **Enterprise (RADIUS)** – It uses an external RADIUS server to perform user authentication. To use RADIUS, enter the IP address of the RADIUS server, the RADIUS port (default is 1812) and the shared secret from the RADIUS server. Please refer to "Authentication RADIUS Server" setting below for RADIUS setting. **Personal (Pre-Shared Key)** – Pre-Shared Key authentication is based on a shared secret that is known only by the parties involved. To use WPA Pre-Shared Key, select key format and enter a password in the "Pre-Shared Key Format" and "Pre-Shared Key" setting respectively.
Pre-Shared Key Format	You may select to select Passphrase (alphanumeric format) or Hexadecimal Digits (in the "A-F", "a-f" and "0-9" range) to be the Pre-shared Key. For example: Passphrase: "iamguest" Hexadecimal Digits: "12345abcde"
Pre-Shared Key	Please enter 8-63 characters as the "Pre-Shared Key".
Authentication RADIUS Server	Enter the port (default is 1812), the IP address and the password of external RADIUS server are specified here.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

ACL

This wireless router supports MAC Address Control, which prevents unauthorized clients from accessing your wireless network.

Parameter	Description
Wireless Access Control Mode	This router can prevent the wireless clients from accessing the wireless network by checking the MAC Address of the clients. If you enable this function, please set the MAC Address of the wireless clients that you want to filter. **Disable** – Disable this function. **Allow Listed** – Only allow the wireless clients with the MAC Address you have specified can access to the router. **Deny Listed** – The wireless clients with the MAC Address you have specified will be denied accessing to the router.
MAC Address	Enter the MAC Address of the wireless clients for the filtering control.
Current Access Control List	If you want to remove some MAC address from the "Current Access Control List ", select the MAC addresses you want to remove in the list and then click "Delete Selected". If you want remove all MAC addresses from the table, just click "Delete All"

button. Click "Reset" will clear your current selections.

When you finish, click ‘Apply Changes’. You’ll see the following message displayed on web browser:

Press ‘Continue’ to save the settings made and back to web management interface; press ‘Apply’ to save the settings made and restart the router so the settings will take effect after it reboots.

WPS

Although home Wi-Fi networks have become more and more popular, users still have trouble with the initial set up of network. This obstacle forces users to use the open security and increases the risk of eavesdropping. Therefore, The Wi-Fi Protected Setup (WPS) is designed to ease set up of security-enabled Wi-Fi networks and subsequently network management.
The largest difference between WPS-enabled devices and legacy devices is that users do not need the knowledge about SSID, channel and security settings, but they could still surf in a security-enabled Wi-Fi network.
This device supports Push Button method and PIN method for WPS. The following sub-paragraphs will describe the function of each item. The webpage is as below.

Parameter	Description
Disable WPS	Check to disable the Wi-Fi protected Setup.
WPS Status	When AP's settings are factory default (out of box), it is set to open security and un-configured state. "WPS Status" will display it as "UnConfigured". If it already shows "Configured", some registrars such as Vista WCN will not configure AP. Users will need to go to the "Backup/Restore" page and click "Reset" to reload factory default settings.
Self-PIN Number	"Self-PIN Number" is AP's PIN. Whenever users want to change AP's PIN, they could click "Regenerate PIN" and then click " Apply Changes". Moreover, if users want to make their own PIN, they could enter four-digit PIN without checksum and then click " Apply Changes". However, this would not be recommended since the registrar side needs to be supported with four-digit PIN.

Regenerate PIN	Click to regenerate the Self-PIN Number.
Push Button Configuration	Clicking this button will invoke the PBC method of WPS. It is only used when AP acts as a registrar.
Start PBC	Click to start the Push Button method of WPS.
Reset	It restores the original values.
Client PIN Number	It is only used when users want their station to join AP's network. The length of PIN is limited to four or eight numeric digits. If users enter eight-digit PIN with checksum error, there will be a warning message popping up. If users insist on this PIN, AP will take it.

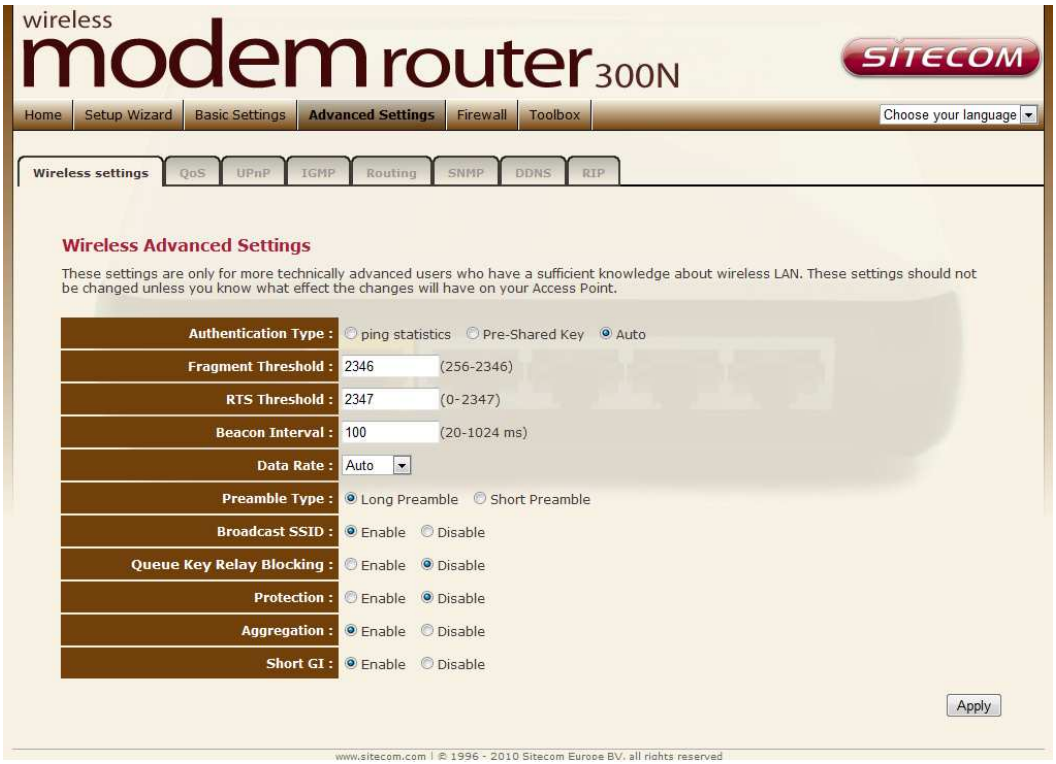
When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

12 Advanced Settings

Wireless Settings

This page allows advanced users who have sufficient knowledge of wireless LAN. These setting shall not be changed unless you know exactly what will happen for the changes you made on your router.



Parameter	Description
Authentication Type	There are three authentication types: "Open System", "Shared Key" and "Auto". Open System: Open System authentication is not required to be successful while a client may decline to authenticate with any particular other client. Shared Key: Shared Key is only available if the WEP option is implemented. Shared Key authentication supports authentication of clients as either a member of those who know a shared secret key or a member of those who do not. IEEE 802.11 Shared Key authentication accomplishes this without the need to transmit the secret key in clear. Requiring the use of

	the WEP privacy mechanism. Auto: Auto is the default authentication algorithm. It will change its authentication type automatically to fulfill client's requirement.
Fragmentation Threshold	Fragment Threshold specifies the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance. Enter a value from 256 to 2346.
RTS Threshold	This value should remain at its default setting of 2347. Should you encounter inconsistent data flow, only minor modifications are recommended. If a network packet is smaller than the preset "RTS threshold" size, the RTS/CTS mechanism will not be enabled. The wireless router sends Request to Send (RTS) frames to a particular receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission.
Beacon Interval	The interval of time that this wireless router broadcast a beacon. Beacon is used to synchronize the wireless network. The range for the beacon period is between 20 and 1024 with a default value of 100 (milliseconds).
Data Rate	The rate of data transmission should be set depending on the speed of your wireless network. You should select from a range of transmission speeds, or you can select *Auto* to have the wireless router automatically use the fastest possible data rate and enable the Auto-Fallback feature. Auto-Fallback will negotiate the best possible connection speed between the router and a wireless client. The default setting is "Auto".
Preamble Type	The Preamble Type defines the length of the CRC (Cyclic Redundancy Check) block for communication between the router and wireless stations. Make sure to select the appropriate preamble type. Note that high network traffic areas should use the "Short Preamble". CRC is a common technique for detecting data transmission errors.
Broadcast SSID	If this option is enabled, the router will automatically transmit the network name (SSID) into open air at regular interval. This feature is intended to allow clients to dynamically discover the router. If this option is disabled, the router will hide its SSID. When this is done, the clients cannot directly discover the router and MUST be configure with the SSID for accessing to the router. It is used to protect your network from being accessed easily.
Relay Blocking	When you enable this function, wireless clients will not be able to directly access other wireless clients.
Protection	This is also called CTS Protection. It is recommended to enable the protection mechanism. This mechanism can decrease the rate of data collision between 802.11b and 802.11g/802.11n wireless stations. When the

	protection mode is enabled, the throughput of the AP will be a little lower due to many of frame traffic should be transmitted.
Aggregation	This function is used to join multiple data packets for transmission as a single unit to increase network efficiency.
Short GI	The 802.11n draft specifies two guard intervals: 400ns (short) and 800ns (long). Support of the 400ns GI is optional for transmit and receive. Enable this function will increase network efficiency.

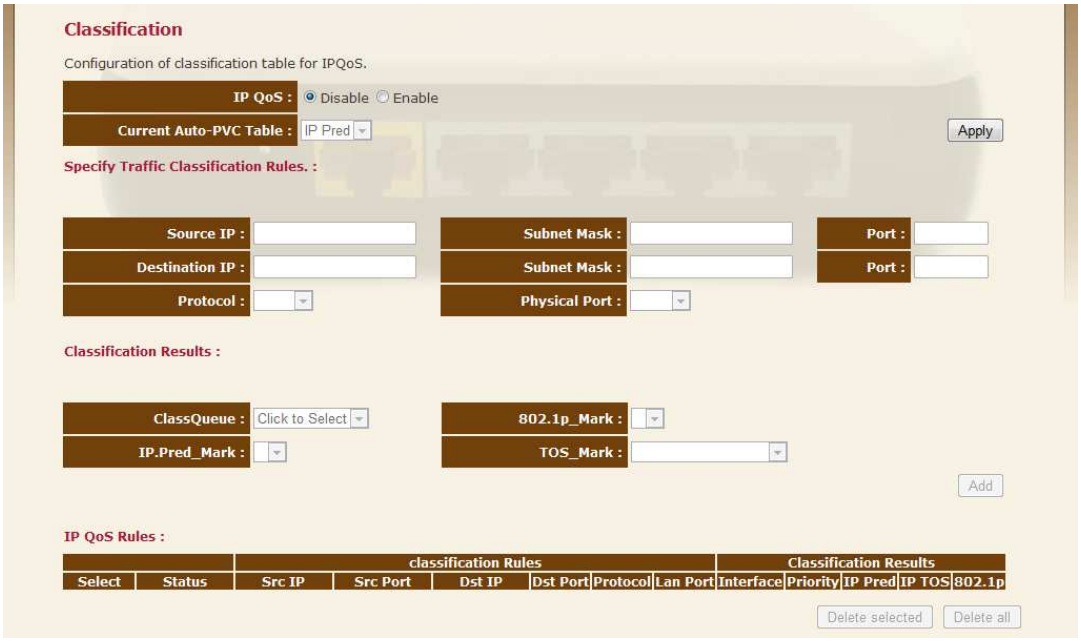
When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

QoS

The router supports IP QoS feature that can provide different priority to different users or data flows.

Classification



Parameter	Description
IP QoS	Click the radio button to enable or disable the IP QoS function.
Default QoS	Select the default mode of QoS from the list. IP Pred: In QoS, a three-bit field in the ToS byte of the IP header (see RFC 791). Using IP Precedence, a network administrator can assign values from 0(the default) to 7 to classify and prioritize types of traffic. 802.1P: IEEE 802.1p is a 3 bit field within an Ethernet frame header when using tagged frames on an 802.1 network. It specifies a priority value of between 0 and 7 inclusive that can be used by Quality of Service (QoS) disciplines to differentiate traffic.
Source IP	The IP address of the traffic source.
Netmask (Source)	The source IP netmask. This field is required if the source IP has been entered.
Port (Source)	The source port of the selected protocol. You cannot configure this field without entering the protocol first.
Destination IP	The IP address of the traffic destination.
Netmask	The destination IP netmask. This field is required if the

(Destination)	destination IP has been entered.
Port (Destination)	The destination port of the selected protocol. You cannot configure this field without entering the protocol first.
Protocol	The selections are TCP, UDP, ICMP and the blank for none. This field is required if the source port or destination port has been entered.
Physical Port	The incoming ports. The selections include LAN ports, wireless port, and the blank for not applicable.
ClassQueue	The priority level for the traffic that matches this classification rule. Please refer to **5.2.5.2 QOS Queue** to create a ClassQueue.
802.1p_Mark	Select this field to mark the 3-bit user-priority field in the 802.1p header of the packet that matches this classification rule. Note that this 802.1p marking is workable on a given PVC channel only if the VLAN tag is enabled in this PVC channel.
IP.Pred_Mark	Select this field to mark the IP precedence bits in the packet that match this classification rule.
TOS_Mark	The IP (Internet Protocol) uses the ToS (Type of Service) field to provide an indication of the quality of service desired. These parameters are to be used to guide the selection of the actual service parameters when transmitting an IP datagram through a particular network.0
IP QoS Rules	This table lists the rules you have configured. Click "Delete Selected" to delete the selected rules or click "Delete All" to delete all the rules.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

UPnP

When the UPnP function is enabled, the router can be detected by UPnP compliant system such as Windows XP. The router will be displayed in the Neighborhood of Windows XP, so you can directly double click the router or right click the router and select "Invoke" to configure the router through web browser.

Parameter	Description
UPnP	Enable or disable UPnP feature.
WAN Interface	The upstream WAN interface is selected here. Select WAN interface that will use UPnP from the drop-down lists.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

IGMP

The IGMP Proxy page allows you to enable multicast on WAN and LAN interfaces. The LAN interface is always served as downstream IGMP proxy, and you can configure one of the available WAN interfaces as the upstream IGMP proxy. Upstream is the interface that IGMP requests from hosts are sent to the multicast router. Downstream is the interface data from the multicast router are sent to hosts in the multicast group database.

Parameter	Description
IGMP Proxy	Enable or disable IGMP proxy feature.
Proxy Interface	The upstream WAN interface is selected here.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

Routing

The page enables you to define specific route for your Internet and network datas.

Most users do not need to define routes. On a typical small home or office LAN, the existing routes that set up the default gateways for your LAN hosts and for the router provide the most appropriate path for all your Internet traffic.

You may need to define routes if your home setup includes two or more networks or subnets, if you connect to two or more ISP services, or if you connect to a remote corporate LAN.

Parameter	Description
Enable	Check to enable the selected route or route to be added.
Destination	The destination can be specified as the IP address of a subnet or a specific host in the subnet. It can also be specified as all zeros to indicate that this route should be used for all destinations for which no other route is defined (this is the route that creates the default gateway).
Subnet Mask	The network mask of the destination subnet. The default gateway uses a mask of 0.0.0.0.
Next Hop	The IP address of the next hop through which traffic will flow towards the destination subnet.
Metric	Defines the number of hops between network nodes that data packets travel. The default value is 0, which means that the subnet is directly one hop away on the local LAN network.
Interface	The WAN interface to which a static routing subnet is to be applied.
Add Route	Add a user-defined destination route.

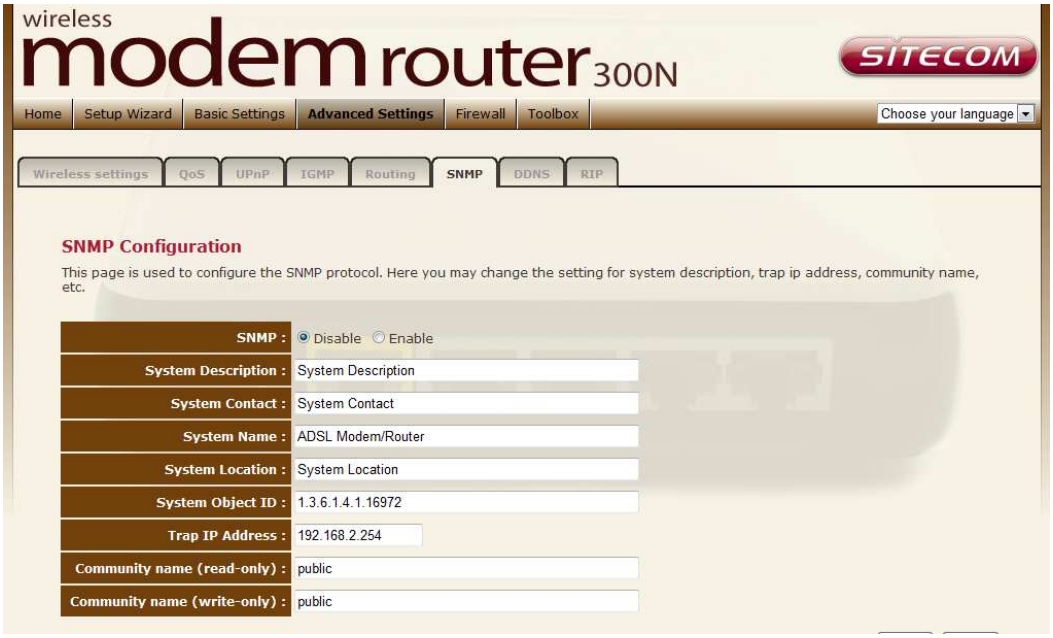
Show Routes	Click this button to view the router's routing table.
Static Route Table	Click "Update" to update the selected destination route on the "Static Route Table". Click "Delete Selected" to delete a selected destination route on the Static Route Table.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

SNMP

Simple Network Management Protocol (SNMP) is a troubleshooting and management protocol that uses the UDP protocol on port 161 to communicate between clients and servers. The router can be managed locally or remotely by SNMP protocol.



Parameter	Description
SNMP	Select "Disable" or "Enable" to disable or enable the SNMP feature.
System Description	Enter the system description of the router.
System Contact	Enter the contact person and/or contact information for the router.
System Name	Assign an administratively name for the router.
System Location	The physical location of the router.
System Object ID	It is the vendor object identifier. The vendor's authoritative identification of the network management subsystem contained in the entity.
Trap IP Address	Destination IP address of the SNMP trap.
Community name (read-only)	Name of the read-only community. This read-only community allows read operation to all objects in the MIB.
Community name (write-only)	Name of the write-only community. This write-only community allows write operation to the objects defines as read-writable in the MIB.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press ‘Continue’ to save the settings made and back to web management interface; press ‘Apply’ to save the settings made and restart the router so the settings will take effect after it reboots.

DDNS

Dynamic DNS (DDNS) allows you to map the static domain name to a dynamic IP address. You must get an account, password and your static domain name from the DDNS service providers.

Parameter	Description
Enable	Check the box to enable DDNS function.
DDNS Provider	Select your DDNS service provider here. This router supports DynDNS and TZO service providers
Host Name	Enter the domain name you've obtained from DDNS service provider.
DynDns Settings	
Username	Enter the username assigned by the DDNS service provider.
Password	Enter the password assigned by the DDNS service provider.
TZO Settings	
Email	Enter the Email account that your DDNS service provider assigned to you.
Key	Enter the password that your DDNS service provider assigned to you.
Add/Modify/Remove	These buttons are for you to maintain the DDNS table.-
Dynamic DDNS Table	The DDNS you have configured will be added to the list.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press ‘Continue’ to save the settings made and back to web management interface; press ‘Apply’ to save the settings made and restart the router so the settings will take effect after it reboots.

RIP

RIP is an Internet protocol you can set up to share routing table information with other routing devices on your LAN, at your ISP's location, or on remote networks connected to your network via the ADSL line.

Most small home or office networks do not need to use RIP; they have only one router, such as the ADSL Router, and one path to an ISP. In these cases, there is no need to share routes, because all Internet data from the network is sent to the same ISP gateway.

You may want to configure RIP if any of the following circumstances apply to your network:

- Your home network setup includes an additional router or RIP-enabled PC (other than the ADSL Router). The ADSL Router and the router will need to communicate via RIP to share their routing tables.
- Your network connects via the ADSL line to a remote network, such as a corporate network. In order for your LAN to learn the routes used within your corporate network, they should both be configured with RIP.
- Your ISP requests that you run RIP for communication with devices on their network.

Parameter	Description
RIP	Enable/disable the RIP feature.
Interface	Select the interface that you want to enable the RIP feature.
Receive Mode	Indicate the RIP version in which information must be

	passed to the DSL device in order for it to be accepted into its routing table.
Send Mode	Indicate the RIP version this interface will use when it sends its route information to other devices.
RIP Config Table	The RIP you have configured will be listed in the table. If you want to delete some settings, please select the settings and click "**Delete Selected**".

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

13 Firewall Settings

The Broadband router provides extensive firewall protection by restricting connection parameters, thus limiting the risk of hacker attacks, and defending against a wide array of common Internet attacks. However, for applications that require unrestricted access to the Internet, you can configure a specific client/server as a Demilitarized Zone (DMZ).

Port Forwarding

The Port Forwarding allows you to re-direct a particular range of service port numbers (from the Internet) to a particular LAN IP address. It helps you to host some servers behind the router NAT firewall.

Parameter	Description
Port Forwarding	Check this item to enable or disable the port-forwarding feature.
Protocol	This is the protocol type to be forwarded. You can choose to forward "TCP" or "UDP" packets only or select "Both" to forward both "TCP" and "UDP" packets.
Comment	Enter the comment for the setting.
Enable	Check this item to enable this entry.
Local IP Address	IP address of your local server that will be accessed by Internet.
Local IP Port	The destination port number that is made open for this application on the LAN side.
Remote IP Address	The source IP address from which the incoming traffic is allowed. Leave blank for all.

Public Port	The destination port number that is made open for this application on the WAN side
Interface	Select the WAN interface on which the port-forwarding rule is to be applied.
Current Port Forwarding Table	If you want to remove the port forwarding settings from the table, select the items and then click "Delete Selected". If you want remove all settings, just click "Delete All" button.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

Port Filter

The IP/Port filtering feature allows you to deny/allow specific services or applications in the forwarding path.

Parameter	Description
Outgoing Default Action	Specify the default action on the LAN to WAN (Traffic to Internet) forwarding path. You can choose 'Allow' if you allow the IP Addresses listed in the following table to connect to the Internet; choose 'Deny' if you deny the IP Addressed listed in the following table to connect to the Internet.
Incoming Default Action	Specify the default action on the WAN to LAN (Traffic from Internet) forwarding path. You can choose 'Allow' if you allow the IP Addresses listed in the following table from connecting to the Internet; choose 'Deny' if you deny the IP Addressed listed in the following table from connecting to the Internet.
Direction	Select the traffic forwarding direction: outgoing or incoming.
Protocol	There are 3 options available: TCP, UDP and ICMP.
Rule Action	Deny or allow traffic when matching this rule.
Source IP Address	Enter the start IP Address which will be monitored.
Subnet Mask	Enter the Subnet Mask based on the Source IP

	Address.
Port	LAN users use port number to distinguish one network application over another such as 21 is for FTP service. The port number range is from 0 to 65535. It is recommended that this option be configured by an advanced user.
Destination IP Address	Enter the destination IP Address which will be monitored.
Subnet Mask	Enter the Subnet Mask based on the Destination IP Address.
Port	This is the port or port ranges that define the application.
Current Filter Table	If you want to remove some IP/Port filter settings from the "Current Filter Table", select the items you want to remove in the list and then click "Delete Selected". If you want remove all the items from the table, just click "Delete All" button.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

MAC Filtering

The MAC filtering feature allows you to define rules to allow or deny frames through the router based on source MAC address, destination MAC address, and traffic direction.

Parameter	Description
Outgoing Default Action	Specify the default action on the LAN to WAN (Traffic to Internet) forwarding path. You can choose 'Allow' if you allow the IP Addresses listed in the following table from connecting to the Internet; choose 'Deny' if you deny the IP Addressed listed in the following table from connecting to the Internet.
Incoming Default Action	Specify the default action on the WAN to LAN (Traffic from Internet) forwarding path. You can choose 'Allow' if you allow the IP Addresses listed in the following table from connecting to the Internet; choose 'Deny' if you deny the IP Addressed listed in the following table from connecting to the Internet. Specify the default action on the WAN to LAN (Traffic from Internet) forwarding path. You can choose 'Allow' if you allow the IP Addresses listed in the following table from connecting to the Internet; choose 'Deny' if you deny the IP Addressed listed in the following table from connecting to the Internet.
Direction	Traffic bridging/forwarding direction: outgoing or incoming.
Rule Action	Deny or allow traffic when matching this rule.
Source MAC Address	The source MAC address. It must be 12-digit hexadecimal format, for example: "00-d0-59-c6-12-43".

Destination MAC Address	The destination MAC address. It must be 12-digit hexadecimal format, for example: "00-d0-59-c6-12-50".
Current Filter Table	If you want to remove some filter rules from the "Current Filter Table", select the MAC Address you want to remove in the table and then click "Delete Selected". If you want remove all settings from the table, just click "Delete All" button.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

URL Blocking

This page is used to block some URL addresses or keywords.

Parameter	Description
URL Blocking	Enable or disable the URL blocking function.
FQDN	Enter FQDN which you want to block. A FQDN is a complete DNS name. For example, "www.yahoo.com".
URL Blocking Table	The FQDN settings will be listed in the table. If you want to delete some FQDN settings from the table, please select the settings and click "**Delete Selected**". If you want remove all settings from the table, just click "**Delete All**" button.
Keyword	Enter the keyword of the URL Address that you want to filter.
Keyword Filtering Table	The keyword settings will be listed in the table. If you want to delete some keyword settings from the table, please select the settings and click "**Delete Selected**". If you want remove all settings from the table, just click "**Delete All**" button.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press ‘Continue’ to save the settings made and back to web management interface; press ‘Apply’ to save the settings made and restart the router so the settings will take effect after it reboots.

Domain Blocking

The firewall includes the ability to block access to specific domain based on string matches. For example, if the URL of Taiwan Yahoo web site is “tw.yahoo.com” and you enter “yahoo.com”, the firewall will block all the DNS queries with “yahoo.com” string. So the Host will be blocked to access all the URLs belong to “yahoo.com” domain. That means you can protect your computer, your house, your office and anything else that uses DNS from being able to service domains that you don’t want to load.

Parameter	Description
Domain Blocking	Check this item to enable the Domain Blocking feature.
Domain	The blocked domain. If the URL of Taiwan Yahoo web site is tw.yahoo.com, the domain can be yahoo.com.
Delete Selected/All	If you want to delete a specific Domain Block entry, check the ‘select’ box of the Domain Block you want to delete, then click ‘Delete Selected’ button. If you want remove all settings from the table, just click "Delete All" button.

ACL Configuration

The Access Control List (ACL) is a list of permissions attached to the router. The list specifies who is allowed to access this router. If ACL is enabled, all hosts cannot access this router except for the hosts with IP address in the ACL table.

Parameter	Description
ACL Capability	Enable or disable the ACL function
Enable	Check to enable this ACL entry
Interface	Select the interface domain: LAN or WAN
IP Address	Enter the IP address that is allowed to access the router.
Subnet Mask	Enter the Subnet Mask that is allowed to access the router.
ACL Table	The ACL settings will be listed here. You can click "Delete Selected" to delete the settings you have selected. If you want remove all settings from the table, just click "Delete All" button.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

DMZ

The DMZ Host is a local computer exposed to the Internet. When setting a particular internal IP Address as the DMZ Host, all incoming packets will be checked by the firewall and NAT algorithms then passed to the DMZ Host.

For example, if you have a local client PC that cannot run an Internet application (e.g. Games) properly from behind the NAT firewall, then you can open the client up to unrestricted two-way Internet access by defining a DMZ Host.

Parameter	Description
DMZ Host	Check the item to enable the DMZ function.
DMZ Host IP Address	Enter a static IP Address to the DMZ Host. This IP Address will be exposed to the Internet.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings made and restart the router so the settings will take effect after it reboots.

14 TOOLBOX Settings

Password

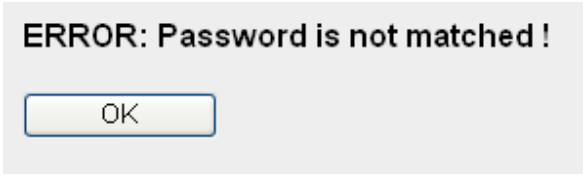
This page allows you to set the password to access the web server of the router. Please select the "admin (as administrator)" or "user (as user)" account and configure the password.

When you finish, click 'Apply Changes'.

If the password you typed in 'New Password' and 'Confirmed Password' field are not the same, you'll see the following message:

Please retype the new password again when you see above message.

If you see the following message:



It means the content in 'Current Password' field is wrong, please click 'OK' to go back to previous menu, and try to input current password again.

If the current and new passwords are correctly entered, after you click 'Apply', you'll be prompted to input your new password:

Please use new password to enter web management interface again, and you should be able to login with new password.

Time Zone

The Time Zone allows your router to set its time; especially for recording System Log.

Parameter	Description
Current Time	The current time of the specified time zone. You can set the current time by yourself or configured by SNTP server.
Time Zone Select	Select the time zone of the country you are currently in. The router will set its time based on your selection.
Enable SNTP client update	Check the box to enable router to update time from SNTP server.
SNTP server	The IP address or the host name of the SNTP server. You can select from the list or set it manually.

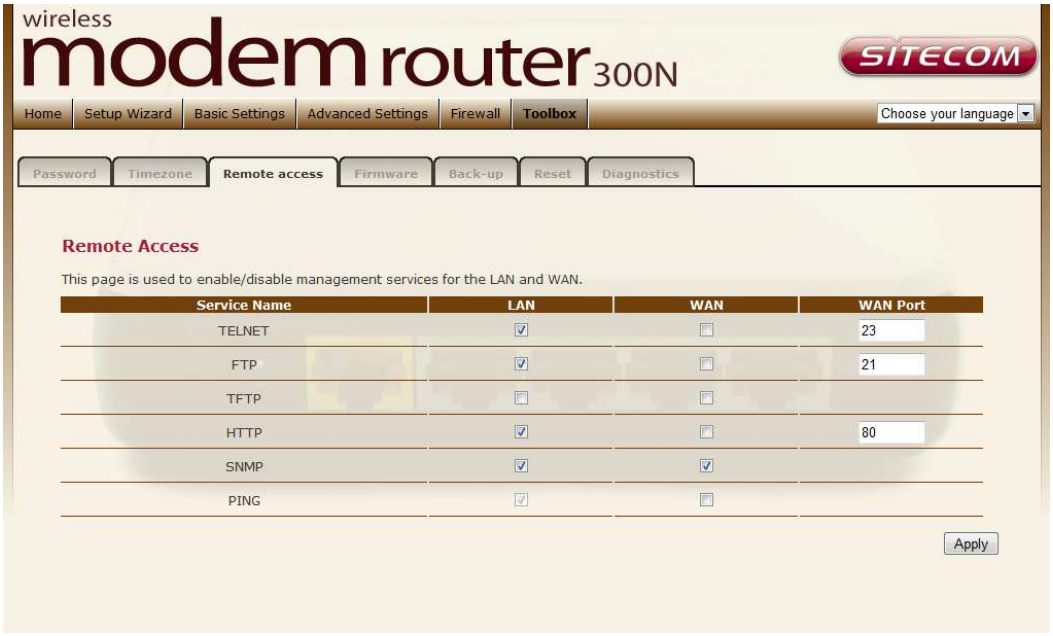
When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press 'Continue' to save the settings made and back to web management interface; press 'Apply' to save the settings and restart the router so the settings will take effect after it reboots.

Remote Access

The Remote Access function can secure remote host access to your router from LAN and WAN interfaces for some services provided by the router. These services include Telnet, FTP, TFTP, HTTP, SNMP and PING.

Please click 'System' menu on the left of web management interface, then click 'Remote Management', and the following page will be displayed on your web browser:



Parameter	Description
LAN	Check/un-check the services on the LAN column to allow/un-allow the services access from LAN side.
WAN	Check/un-check the services on the WAN column to allow/un-allow the services access from WAN side.
WAN Port	This field allows the user to specify the port of the corresponding to the service. Take the HTTP service for example; when it is changed to 8080, the HTTP server address for the WAN side is http://dsl_addr:8080, where the "dsl addr" is the WAN side IP address of the router.

When you finish, click 'Apply Changes'. You'll see the following message displayed on web browser:

Press ‘Continue’ to save the settings made and back to web management interface; press ‘Apply’ to save the settings made and restart the router so the settings will take effect after it reboots.

Firmware Upgrade

This page allows you to upgrade the firmware for the router. Click “Browse” button to select the firmware file and click “Upload” button to start upgrading.

IMPORTANT! Do not turn off your router while this procedure is in progress.

Configuration Tools

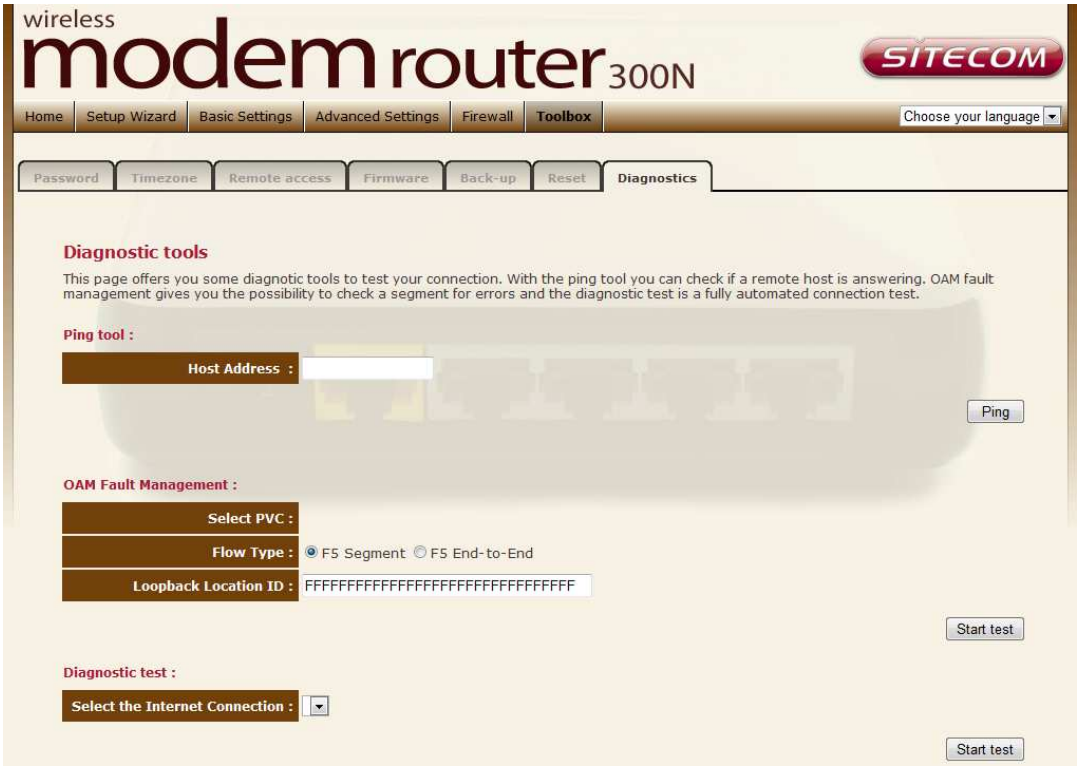
This page allows you to backup the current settings to a file or restore the settings from the file which was saved previously. Besides, you could reset the current configuration to factory defaults.

Parameter	Description
Save Settings to File	Click Save button to save the ADSL router current configuration to a file named "config.bin" on your PC.
Load Settings from File	Click Browse button to search the file you have saved before and click Upload button to restore the saved configuration to the ADSL router.
Restore Settings to Default	Click Reset button if you want to force the ADSL router to perform a power reset and restore the original factory settings.

Reboot

Whenever you use the Web configuration to change system settings, the changes are initially placed in temporary storage. To save your change for future use, you have to click “Apply” to reboot the router. If you have encountered problems during the configuration, You can click the “OPS” button in the top panel of the router over 15 seconds to reset default settings.

Diagnostics



Ping

Once you have your router configured, you can send a ping command to the host you specify in this page. To use it, you must know the IP address of the host you are trying to communicate with and enter the IP address in the Host Address field.

ATM Loopback

In order to isolate the ATM interface problems, you can use ATM OAM loopback cells to verify connectivity between VP/VC endpoints, as well as segment endpoints within the VP/VC. This page allows you to use ATM ping to test the reachable of a segment endpoint or a connection endpoint.

Parameter	Description
Select PVC	Select the PVC channel you want to do the loop-back diagnostic.
Flow Type	The ATM OAM flow type. The selection can be F5 Segment or F5 End-to-End. ATM uses F4 and F5 cell flows as follows: F4: used in VPs F5: used in VCs
Loopback Location ID	The loop-back location ID field of the loop-back cell. The default value is all 1s (ones) to indicate the endpoint of the segment or connection.

Click "**Start test**" to save the setting to the configuration.

Diagnostic Test

The Diagnostic Test page shows the test results for the connectivity of the physical layer and protocol layer for both LAN and WAN sides.